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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/762,293 | 01/23/2004 | Christoph Nagler | 003-109 | 4669 |

36844 7590 03/27/2006

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EXAMINER

WIEHE, NATHANIEL EDWARD

ART UNIT PAPER NUMBER

3745

DATE MAILED: 03/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/762,293

Applicant(s)

NAGLER ET AL.

Examiner

Nathan Wiehe

Art Unit

3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10 and 12-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4, 7, 8, 13, 14 and 16 is/are allowed.
- 6) ☒ Claim(s) 5, 6, 10, 12 and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments, see page 11, filed 21 February 2006, with respect to the priority claim have been fully considered and are persuasive. The objection to the priority claim has been withdrawn.

Applicant's arguments see pages 11-12, filed 21 February 2006, with respect to abstract have been fully considered and are persuasive. The objection of abstract has been withdrawn.

Applicant's arguments, see pages 12-15, filed 21 February 2006, with respect to claims 1-4,7,8,10,12,13,14 and 16 have been fully considered and are persuasive. The rejection of claims 1-4,7,8,13,14 and 16 has been withdrawn.

Applicant's arguments see pages 14-15, filed 21 February 2006, with respect to claims 5 and 6 have been fully considered but they are not persuasive. Applicant argues that the recuperator of Proctor does not meet the claimed limitation of an "orifice region" since it extend for at least 70% of the whole channel and also does not correlate to a beveled or widening region. However, an orifice is merely an opening, through which something may pass, which the recuperator of Proctor is clearly capable of doing. Also, the recuperator of Proctor is only a region, although preferably a large portion, or a larger cooling passage. Further, the Proctor clearly describes the region as "flared in a substantially continuous manner wherein the channel cross-sectional area continuously and smoothly increased in the direction of flow (Proctor column 5, lines 31-35).

Applicant's arguments see page 15, filed 21 February 2006, with respect to claim 15 have been fully considered but they are not persuasive. Applicant argues that the groove of Rizk would not be an obvious improvement since the groove opens radially inward as opposed to axially. However, it is noted that the claim does not expressly require an axially opening groove. Thus it would be obvious to include a groove as taught by Rizk for the purpose of improved circumferential distribution of cooling air, regardless of the possible interaction between the seal and the openings. Further, it is noted that the inclusion of a limitation requiring the groove to be axially opening would potentially put the claim into allowable format pending an updated search.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 includes the limitation "wherein the second component comprises a second hear shield or a root of a guide blade of a gas turbine", in lines 1-3. However, the limitation contradicts a limitation of claim 1, from which it depends, which establishes the second component as the seal.

Claim 12 includes the limitation of "a third component", in line 3, with a gap between the first and third components. This limitation apparently attempts to broaden

Art Unit: 3745

the limitation of claim 1, from which it depends, since claim 1 includes limitations of a second heat shield or a root of a guide blade. Therefore, it is unclear as to what element applicant is disclosing as the third component, specifically is it an additional unreferenced element or is it the second heat shield or root of a guide blade.

Claim Rejections - 35 USC § 103

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartos (4,199,151) in view of Proctor (5,165,847). Bartos shows a first component, a heat shield, including hanger support (13) and shroud segments (18), a second component, including nozzle support (12), seal (11) and guide blade root (14), and a first cavity (21) communicatively connected to the second cavity (defined by the first component) by a plurality of circumferentially spaced cooling-gas passages (22) through a wall (part of 13), in the first component, which separates the first and second cavities. Bartos' second component (12) bears against the wall of the first component through seal (11) and separates the first cavity from the third cavity (HOT AIR). The orifice region, facing the first cavity, of the cooling passages (22) are positioned so that the orifice region is open with at least a predetermined minimum cross section when the second component is within its inherent range of displacement. The positioning of cooling passages (22) also inherently does not open toward the third cavity (HOT AIR) in any position of the second component (11) within its inherent range of displacement. Bartos does not disclose the use of a bevel orifice region. Proctor teaches the use of a widening cross-sectional bevel (86) in the orifice region of a cooling passageway for use

Art Unit: 3745

in shroud cooling of a turbomachine. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the cooling passageways of Bartos by including a beveled orifice region as taught by Proctor in order to "provide regulated and substantially uniform cooling airflow" (Proctor column 4, lines 56-57).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartos in view of Rizk (3,300,178). Bartos shows a first component, a heat shield, including hanger support (13) and shroud segments (18), a second component, including nozzle support (12), seal (11) and guide blade root (14), and a first cavity (21) communicably connected to the second cavity (defined by the first component) by a plurality of circumferentially spaced cooling-gas passages (22) through a wall (part of 13), in the first component, which separates the first and second cavities. Bartos' second component (12) bears against the wall of the first component through seal (11) and separates the first cavity from the third cavity (HOT AIR). The orifice region, facing the first cavity, of the cooling passages (22) are positioned so that the orifice region is open with at least a predetermined minimum cross section when the second component is within its inherent range of displacement. The positioning of cooling passages (22) also inherently does not open toward the third cavity (HOT AIR) in any position of the second component (11) within its inherent range of displacement. Bartos does not disclose the use of a groove. Rizk teaches the use of a circumferentially extending groove (70) connecting multiple cooling passageways (holes associated with cooling channels (63)) for shroud cooling in a turbine. Rizk's groove (70), and thus the orifice region, has a

Art Unit: 3745

constant cross-section that is greater than that of the cooling passageways and includes an abrupt cross-sectional widening (the groove base surface not including passageway holes). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the cooling arrangement of Bartos by including a circumferentially extending groove connecting a plurality of cooling passageways, as taught by Rizk, located along the bearing side of the wall piece of support hanger (13) in order to circumferentially distribute cooling air.

Allowable Subject Matter

Claims 1-4,7,8,13,14 and 16 are allowed.

In regard to claim 15, as previously stated the claim could potentially be allowable if it were amended so that the groove was required to open axially.

The following is an examiner's statement of reasons for allowance:

The instant invention is deemed to be an unobvious improvement over the invention of U.S. Pat. No. 4,199,151. The improvement comprising the arrangement of the seal so that it bears against a second heat shield or against a root of a guide blade of the gas turbine.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

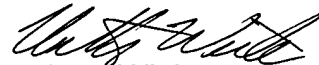
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Wiehe whose telephone number is (571)272-8648. The examiner can normally be reached on Mon.-Thur. and alternate Fri., 7am-4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (571)272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Nathan Wiehe
Examiner
Art Unit 3745



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3/12/06